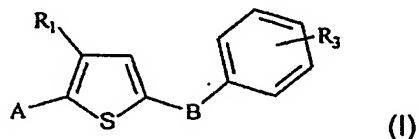


CLAIMS

1. Process for preparing 2,5-disubstituted 3-alkylthiophenes of formula

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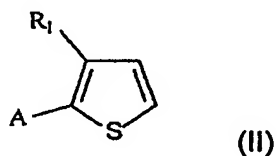
in which

- A represents a CH_3 , R_2CH_2 , HOCH_2 or $\text{R}_2\text{CH}(\text{OH})$ - group,
 B represents a CHOH or CH_2 group,
 R_1 represents H or a C_1 - C_5 alkyl group,
 R_2 represents a C_1 - C_5 alkyl group,
 R_3 represents H or a C_1 - C_5 alkyl group or a C_1 - C_5 haloalkyl group, or a halogen
 chosen from fluorine, chlorine and bromine,

15

which comprises:

- (a) the reaction of a compound of formula



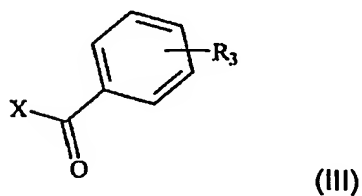
20

in which

- A represents a CHO , CH_3 , R_2CH_2 or $\text{R}_2\text{-CO-}$ group, and
 R_1 and R_2 have the meanings given above;

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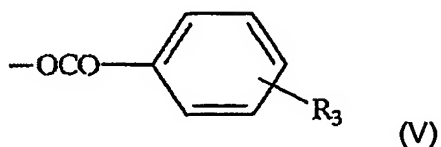
with a compound of formula



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in which

X represents OH, halogen or a group of formula



5

or a group of formula



10

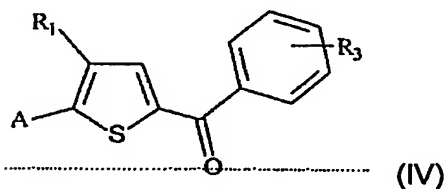
in which

R₄ represents a C₁-C₅ alkyl, an optionally substituted benzyl or an optionally substituted aryl, and

R₃ has the meanings given above;

15

to give a compound of formula



20

in which

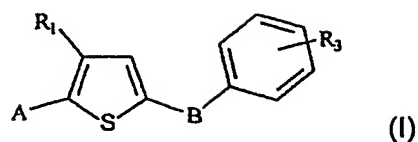
A, R₁, R₂ and R₃ have the meanings given above; and

- (b) the reduction of the compound of formula IV thus obtained to give the compound of formula I.

25

2. Process according to Claim 1 for the preparation of 2,5-disubstituted 3-alkylthiophenes of formula

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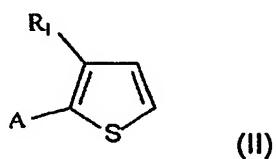
in which

A represents a CH_3 or R_2CH_2 group,

5

which comprises:

(a) the reaction of a compound of formula



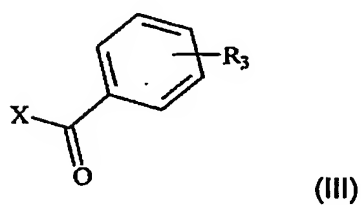
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in which

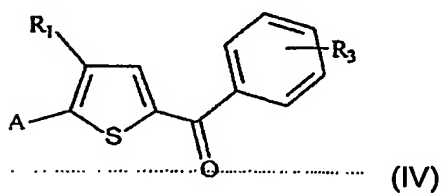
A represents a CH_3 or R_2CH_2 group,

with a compound of formula

15



to give a compound of formula



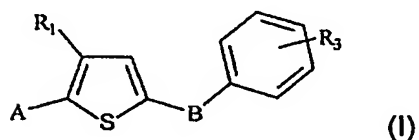
20

in which

A represents a CH_3 or R_2CH_2 group, and

(b) the reduction of the compound of formula IV thus obtained to give the compound of formula I.

- 5 3. Process according to Claim 1 for the preparation of 2,5-disubstituted 3-alkylthiophenes of formula

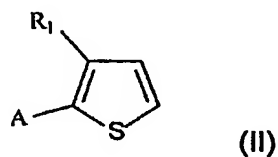


10 in which

A represents a CH_3 , R_2CH_2 , HOCH_2 or $\text{R}_2\text{CH}(\text{OH})$ - group,

which comprises:

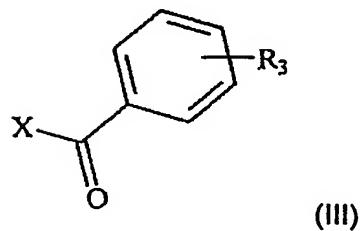
- 15 (a) the reaction of a compound of formula



in which

20 A represents a CHO or $\text{R}_2\text{-CO-}$ group,

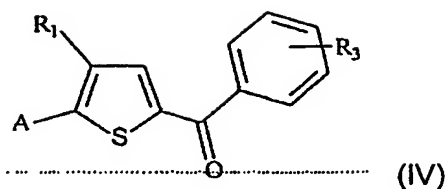
with a compound of formula



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to give a compound of formula

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in which

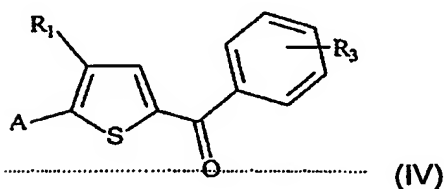
A represents a CHO or R₂-CO group, and

5

- (b) the reduction of the compound of formula IV thus obtained to give the compound of formula I.

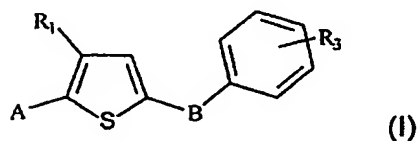
- 10 4. Process according to Claim 1 in which the reaction mentioned in point (a) is performed with a compound of formula III, in which X represents halogen, in the presence of a Lewis acid and in a solvent chosen from chlorinated solvents and deactivated aromatic solvents, preferably with benzoyl chloride, in the presence of AlCl₃ and in methylene chloride, in which the molar ratio of compound III/Lewis acid/compound II is between 0.9-1.5/0.9-1.5/1 and preferably about 1/1/1.
- 15

5. Process according to Claim 1, in which the reduction mentioned in point (b) is performed by means of a single reductive treatment of the compound of formula



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to give the compound of formula



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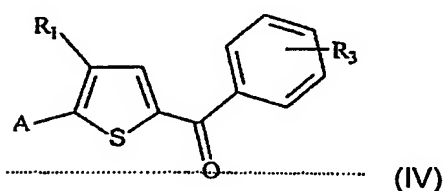
in which

A represents a CH₃ or R₂CH₂ group, and

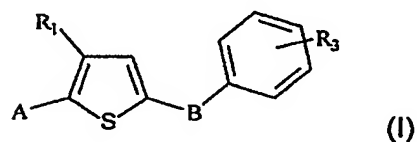
B represents a CH_2 group.

6. Process according to Claim 5, in which the said reductive treatment is performed with sodium borohydride or sodium cyanoborohydride in the presence of trifluoroacetic acid.

7. Process according to Claim 1, in which the reduction mentioned in point (b) is performed by means of a first reduction reaction (b_1) of the compound of formula



to give the hydroxylated intermediate compound of formula

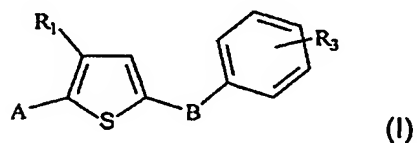


in which

A represents a CH_3 , R_2CH_2 , HOCH_2 or $\text{R}_2\text{CH}(\text{OH})$ - group, and

B represents a CHOH group;

optionally followed by a second reduction reaction (b_2) of the said hydroxylated intermediate of formula I to give a final compound of formula

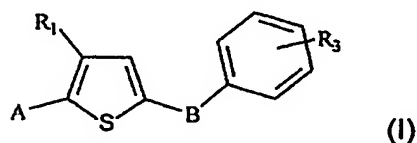


in which

A represents a CH_3 or R_2CH_2 group, and

B represents a CH_2 group.

8. Process according to Claim 7, in which the reduction mentioned in point (b) is performed by means of the said reduction reactions (b_1) and (b_2) successively.
9. Process according to Claim 7, in which the first of the said reduction reactions (b_1) is performed by treatment with metal hydrides, such as sodium borohydride, lithium aluminium hydride or boranes, or by treatment with aluminium isopropoxide, preferably by treatment with sodium borohydride.
10. Process according to Claim 7, in which the second of the said reduction reactions (b_2) is performed by treatment with a borohydride in the presence of a strong acid, such as trifluoroacetic acid, methanesulphonic acid or sulphuric acid, or with zinc iodide or by catalytic hydrogenation, preferably by treatment with sodium borohydride and trifluoroacetic acid.
11. Process according to Claim 7, in which the second of the said reduction reactions (b_2) is performed by catalytic hydrogenation of the hydroxylated intermediate of formula I ($B=CHOH$) dissolved in a suitable solvent, such as an alcohol, for instance methanol, ethanol or isopropanol, preferably methanol, or in a mixture of water and alcohols, at a hydrogen pressure of between 1 and 10 bar, at a temperature of between 15 and 60°C, in the presence of a hydrogenation catalyst chosen from palladium and platinum, preferably palladium supported on an inert support such as carbon, alumina, silica or zeolites, preferably on carbon, in a neutral or acidic medium.
12. Process according to Claim 7, in which the said hydroxylated intermediate compound of formula

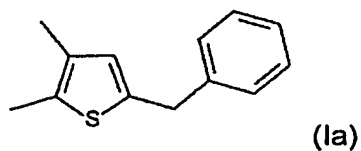


in which

- A represents a CH₃, R₂CH₂, HOCH₂ or R₂CH(OH)- group, and
 B represents a CHOH group

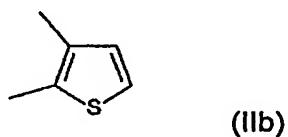
is purified by crystallization.

- 5 13. Process for preparing 2,3-dimethyl-5-benzylthiophene of formula



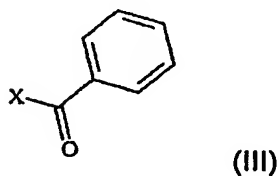
which comprises:

- 10 (a) the reaction of the compound of formula



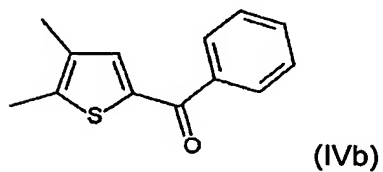
with a compound of formula

15

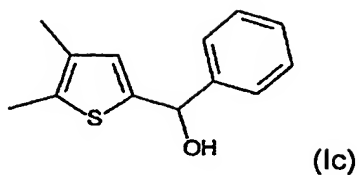


in which X represents halogen;

- 20 to give the compound of formula



- 25 (b₁) the reduction of compound IVb to give the hydroxylated intermediate compound of formula



and

5

(b₂) the reduction of the hydroxylated intermediate compound Ic to give 2,3-dimethyl-5-benzylthiophene (Ia).

10 14. Process according to Claim 13, in which the reactions mentioned in points (a), (b₁) and (b₂) are performed under the experimental conditions of Claims 4, 9 and 10, respectively.

15 15. Process according to Claim 13, in which the hydroxylated intermediate compound of formula Ic is purified by crystallization, preferably from n-heptane.